

DRAFT Arizona Native American Agricultural and Water Practices, SHORT 27May2015

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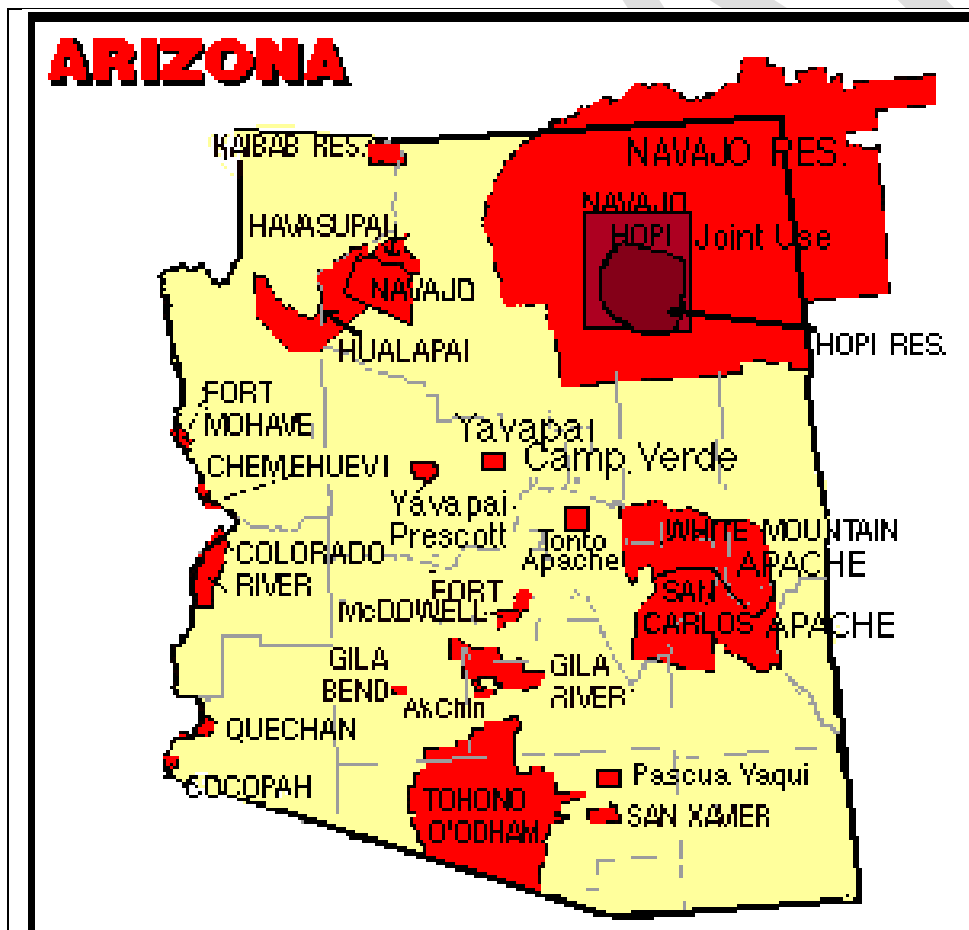
There is so much I don't know and might not be known about these practices. For example, how did Arizona Indians farm? How did they select the land to use, seeds to plant, crops to harvest, how to water and control pests and diseases and scavengers, provide fertilizer, process and preserve and store their crop foods? Did Arizona Indian farmers compost from ag debris or use soil amendments like crop residues, re-use wastewater, use pest-sacrificial plants, filter irrigation water, build aqueducts, use siphons and u-tubes and head gates and weirs and sluices and ramadas and staff gages and flow meters and pipes and valves and reducers, fertilize with human and animal waste or other materials, use nurseries or greenhouses, select/ breed seeds for best properties, fence off plantings or fields to discourage scavengers, provide shade or frost protection, practice post-harvest food preservation and storage, write down and transmit their agricultural wisdom through training and extension, or calculate/ estimate consumptive water demand, crop yields, irrigation schedules and crop harvesting? Subsistence, individual vs communal, commercial/ trade, row/ field/ greenhouse, irrigation methods, record keeping, crop or field rotation slash and burn? Did they soak their seeds before planting? Did they leave field fallow or practice rotational farming? Who knows?

Agricultural Wisdom From Pre-Modern Arizona Native American Farmers	
Be thankful and modest for the blessings we have to sustain us	
Avoid overworking and working in the heat of the day or use overhead covers to diffuse the heat to avoid heat stress	
Be aware through cognizant scouting (monitoring) to assure soil conditions, water supply, and crop growth and health are favorable; carefully monitor crops and fields for weeds, pests, and diseases, and take appropriate prompt corrective action	
Select farmland with flat soils near springs and running water, and overlying shallow perennial groundwater, to assure irrigation water will be available	
Plant crops in small separated fields to avoid attractiveness to pests and inter-field crop-disease transfer	
Avoid soil tilling as it encourages water evaporation and soil erosion	
Plant multiple and diverse seeds from good edible crop plants in moist soil when the season is favorable	
Mix plants as the Three Sisters – corn, beans and squash – so they support each other	
Cover soil around crop plants with squash leaves to keep soil cool and moist, and reduce evaporation	
Plant sacrificial plants to keep pests off crop plants and to protect the crop	
Keep scavenging animals away from crop plants to reduce crop losses	
Use portable check dams to harvest and store flood waters for irrigation and protect crops from flooding	
Dig deep and narrow irrigation canals and crop rows to reduce water evaporation losses	
Line canal walls with clay mortar to reduce lateral water seepage losses	
Use clay-lined cisterns to store flood water for later irrigation to reduce seepage water losses	
Irrigate in the early or late part of the day, away from the hottest part of the day, before crop plants are stressed for best water use	
Irrigate when water is available or when crop plants look limp or flaccid to avoid plant stress	
Avoid overwatering or standing water in crop rows, basins, and fields as it attracts insects and wastes water to evaporation	
Harvest crops promptly when ready and the season is favorable	
Dry, preserve, and store crop yields to avoid vandalism, theft, moisture, decay, insects, scavengers, and spoilage which would waste all previous efforts	
Use nuts, berries, salt, fruit, cactus, herbs, spices and oils freely to make food more palatable	
Avoid eating discolored, odorous or spoiled food to avoid illness	
Take only the food you will eat to avoid wasting food, our labor and resources	

Arizona Native American Tribe	What food was like in the days before supermarkets
Apache	Unlike their Navajo cousins, they were not farmers but hunters. Men hunted buffalo, deer, antelope,

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	and small game; women gathered nuts, seeds, and fruit. They still ate corn frequently which they got by trading with the Pueblo and the Spanish, or by capturing it during raids. They favored cornbread and acorn stew.
Hopi	As expert farmers, they planted corn, beans, and squash, as well as cotton and tobacco, and raised turkeys for their meat. Men also hunted deer, antelope, and small game, while women gathered nuts, fruits, and herbs. They favored hominy, baked beans, soups, and cornbreads.
Navajo	As farmers, they raised corn, beans, and squash. Men also hunted deer, antelope, and small game; women gathered nuts, fruits, and herbs. After the Spanish introduced domestic sheep and goats, they began raised herds of these animals for their meat and wool as well.
Pueblo	As expert farmers, they raised corn, beans, squash, and sunflowers, as well as cotton and tobacco. Men also hunted deer, antelope, and small game; women gathered nuts, fruits, and herbs. They favored hominy, popcorn, baked beans, soups, and cornbreads.
Tohono O'odham	They planted corn, beans, and squash. Men also hunted deer, javelinas, and small game like rabbits; women gathered nuts, fruits, and herbs. They favored cornbread and stews baked in pit ovens.
Yaqui	As farmers, they planted corn, beans, and squash. Men hunted deer, rabbits, and small game, and sometimes fished in the Gulf of Mexico; women gathered nuts, fruits, and herbs. They favored cornbread and soups.
Zuni	As expert farmers, they raised crops of corn, beans, and squash, as well as cotton and tobacco. Men also hunted deer, antelope, and small game; women gathered nuts, fruits, and herbs. They favored hominy, corn balls, baked beans, soups, and cornbreads.

Source: NALW, 2015. Note: "The Three Sisters - The Navajo Nation called maize, squash and beans 'the three sisters' because they got along so well when are planted together. The bean vines climb up the corn stalks for support, while the squash plants cover the ground below the beans. The large leaves of the squash plants keep out the weeds and shade the soil to keep it from drying out." (Kavin, 2013, p. 62). Note although corn plants have high nitrogen demand, bean plants are legumes and "fix" or remove nitrogen from the air and fix it in the soil, which aids to meet corn's nitrogen demand.



Source: Paula Giese, 1996, 1997 except where elsewhere attributed. CREDITS: Some information on tribes from BIA server; corrected using Veronica Tiller's "American Indian Reservations and Trust Areas," 1996. Last Updated 3/12/97.
<http://www.kstrom.net/isk/maps/az/azmap.html>